

IN THE CLAIMS:

1. (Previously presented) A process for preparing high-functionality polyisocyanates having at least three free isocyanate groups, which comprises

(i) preparation of an addition product (A) which contains only one group which is reactive toward isocyanate and at least two free isocyanate groups by reacting

(a) a diisocyanate or polyisocyanate I with

(b1) compounds having at least three groups which are reactive toward isocyanate or

(b2) compounds containing two groups which are reactive toward isocyanate or mixtures of (b1) and (b2),

where at least one of the components (a) or (b) has functional groups having differing reactivities toward the functional groups of the other component and the reaction ratio is selected so that the addition product (A) contains an average of only one group which is reactive toward isocyanate, and at least two free isocyanate groups.

(ii) optionally, intermolecular addition reaction of the addition product (A) to form a polyaddition product (P) containing an average of only one group which is reactive toward isocyanate and an average of more than two free isocyanate groups, and

(iii) reaction of the isocyanate reactive group of said addition product (A) and/or the polyaddition product (P) with a diisocyanate or polyisocyanate II to form a

high-functionality polyisocyanate having at least three free isocyanate groups and no free isocyanate reactive groups.

2. (Original) A process as claimed in claim 1, wherein the diisocyanate or polyisocyanate I is different from the diisocyanate or polyisocyanate II.

3. (Original) A process as claimed in claim 1 or 2, wherein the diisocyanate or polyisocyanate I used is tetramethylene diisocyanate, tetramethylene diisocyanate trimer, hexamethylene diisocyanate, hexamethylene diisocyanate trimer, dodecyl diisocyanate, isophorone diisocyanate trimer, 4-isocyanatomethyloctamethylene 1, 8-diisocyanate, diphenylmethane 4, 4'-diisocyanate or a mixture thereof.

4. (Previously presented) A process as claimed in claim 1 or 2, wherein the diisocyanate or polyisocyanate I has isocyanate groups of differing reactivity and comprises tolylene 2,4-diisocyanate, tolyene 2,6-diisocyanate, diphenylmethane 2,4'-diisocyanate, phenylene 1,3- and 1,4-diisocyanate, naphthylene 1,5-diisocyanate, tolidine diisocyanate, triisocyanatotoluene, biphenyl diisocyanate, isophorone diisocyanate, 2-butyl-2-ethylpentamethylene diisocyanate, 2-isocyanatopropylcyclohexyl isocyanate, 3 (4)-isocyanatomethyl-1-methylcyclohexyl isocyanate, 1,4-diisocyanato-4-methylpentane, 4-methylcyclohexane 1,3-diisocyanate, dicyclohexylmethane 2,4'-diisocyanate or mixtures thereof.

5. (Previously presented) A process as claimed in claim 1, wherein the diisocyanate or polyisocyanate II comprises tolylene 2,4-diisocyanate, tolylene 2,6-diisocyanate, diphenylmethane 4,4'-diisocyanate, diphenylmethane 2,4'-diisocyanate, polymeric diphenylmethane diisocyanate, naphthylene 1,5-diisocyanate, tolidine diisocyanate, phenylene 1,3- and 1,4-diisocyanate, triisocyanatotoluene, biphenyl diisocyanate, tetramethylene diisocyanate, hexamethylene diisocyanate, dodecyl diisocyanate, lysine alkyl ester diisocyanate, where alkyl is C₁- C₁₀-alkyl, isophorone diisocyanate, 2-methylpentamethylene diisocyanate, 2,2,4- or 2,4,4-trimethylhexamethylene 1,6-diisocyanate, 1,3-diisocyanatocyclohexane, 1,4-diisocyanatocyclohexane, 3(4)-isocyanatomethyl-1-methyl-1-isocyanatocyclohexane, 2-butyl-2-ethylpentamethylene diisocyanate, 4-isocyanatomethyloctamethylene 1,8-diisocyanate, 2-isocyanatopropylcyclohexyl isocyanate, 2-methylcyclohexane 1,3-diisocyanate, 4-methylcyclohexane 1,3-diisocyanate, dicyclohexylmethane 4,4'-diisocyanate, dicyclohexylmethane 2,4'-diisocyanate, 1,3-bis(isocyanatomethyl) cyclohexane, 1,4-bis(isocyanatomethyl) cyclohexane, xylylene diisocyanate, tetramethylxylylene diisocyanate and isocyanates prepared from the isocyanates listed by coupling by means of urethane, allophanate, urea, biuret, uretdione, amide, isocyanurate, carbodiimide, uretonimine, oxadiazinetriene or iminooxadiazinedione structures, or mixtures thereof.

6. (Previously presented) A process as claimed in claim 1, wherein, in the reaction of the addition product (A) and/or the polyaddition product (P) with the diisocyanate or

polyisocyanate II, the ratio of isocyanate groups of the diisocyanate or polyisocyanate II to the isocyanate-reactive groups of the addition product (A) and/or the polyaddition product (P) is selected so that at least 10% of the NCO groups of the diisocyanate or polyisocyanate II are reacted.

7. (Previously presented) A process as claimed in claim 1, wherein the isocyanate-reactive groups of the components (b1) and/or (b2) are selected from hydroxyl groups, mercapto groups, amino groups and mixtures thereof.

8. (Previously presented) A process as claimed in claim 1, wherein the diisocyanate or polyisocyanate I used is isophorone diisocyanate, isophorone diisocyanate trimer, tolylene 2,4-diisocyanate, diphenylmethane 2,4'-diisocyanate, or mixtures thereof and the diisocyanate or polyisocyanate II used is hexamethylene diisocyanate, a hexamethylene diisocyanate oligomer containing isocyanurate, uretdione, urethane, allophanate, iminooxadiazinedione, or biuret groups, diphenylmethane 4,4'-diisocyanate, diphenylmethane 2,4'-diisocyanate, a mixture of diphenylmethane diisocyanates and polymeric diphenylmethane diisocyanate or a mixture of the isocyanates listed.

9. (Previously presented) A process as claimed in claim 1, wherein the compounds (b1) having groups which are reactive toward isocyanate are glycerol, trimethylolmethane, trimethylolethane, trimethylolpropane, 1,2,4-butanetriol,

tris(hydroxymethyl) aminomethane, tris(hydroxyethyl) aminomethane, 2-amino-1, 3-propanediol, 2-amino-2-methyl-1, 3-propanediol, diethanolamine, dipropanolamine, diisopropanolamine, ethanolpropanolamine, bis(aminoethyl) amine, bis(aminopropyl) amine, trisaminononane, pentaerythritol, bis(trimethylolpropane), trifunctional polyetherols, tetrafunctional polyetherols, or polyesterols and the compounds (b2) used are ethylene glycol, diethylene glycol, triethylene glycol, tripropylene glycol, neopentyl glycol, 1,2-butanediol, 1,3-butanediol, 1,4-butanediol, 1,2-pentanediol, 1,3-pentanediol, 1,5-pentanediol, hexanediol, propane-1, 2-dithiol, butane-1, 2-dithiol, mercaptoethanol, mercaptopropanol, mercaptobutanol, ethylenediamine, tolylenediamine, isophoronediamine, cysteamine, ethanolamine, N-methylethanolamine, propanolamine, isopropanolamine, 2-(butylamino) ethanol, 2-(cyclohexylamino) ethanol, 2-amino-1-butanol, 2-(2'-aminoethoxy) ethanol, alkoxylation products of ammonia, 4-hydroxypiperidine, 1-hydroxyethylpiperazine, aminopropanethiol, bifunctional polyetherols or polyesterols.

10. (Previously presented) A high-functionality polyisocyanate, prepared as claimed in claim 1.

11. (Previously presented) A high-functionality polyisocyanate prepared as claimed in claim 1 and which has both aliphatically bound and aromatically bound isocyanate groups.

12. (Previously presented) A paint, a varnish, a coating, an adhesive, a sealant, a pourable elastomer, or a foam comprising a high functionality polyisocyanate prepared as claimed in claim 1.

13. (Previously presented) A polyaddition product obtained using a high-functionality polyisocyanate as claimed in claim 10.